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Note on the Desmidiæ of the United States.

BY REV. FRANCIS WOLLE, Bethlehem, Pa.

I take this opportunity to communicate to this Society a short paper on a subject which, I am happy to say, is every year attracting more attention as a comparatively unexplored field of microscopic life, in which a careful observer can always find something that is new, interesting, and beautiful. I refer to the fresh-water algæ of the United States, particularly to that class of them known as Desmidiæ. Owing to various draw-backs the study of these has, until a very recent period, been greatly neglected; now, however, that the appliances, information, and opportunities necessary to a satisfactory prosecution of the work of observation have been brought within more general reach, the net results obtained have been very encouraging. An impediment against which the student has still to contend is the almost total absence of accessible works upon the subject. Excepting two small treatise, one by Prof. J. W. Bailey and the other by Dr. H. C. Wood, the student has nothing to guide him outside the rarer English, German, and Latin publications. How narrow the scope of the two works just alluded to may be inferred from the fact that the two united describe only about one hundred and sixty forms of desmids, whereas my list includes fully four hundred.

There is no study which furnishes a larger variety of subjects for the microscopist than this interesting group of symmetrically beautiful, though exceedingly minute, cryptogamic water plants. Few, if any, ponds and placid streams are wholly devoid of them. It would, however, be labor thrown away to seek them in rapid or disturbed streams, since they have no points of attachment,

but float freely in their natural element, and hence are readily carried away by currents and other moving causes. Although their proportions are microscopic, the explorer meets, after little experience, with no difficulty in detecting and collecting all the specimens which come within his reach, for, while individually exceedingly minute, they form in the aggregate characteristic masses which a practiced eye can readily distinguish. The life phenomena of these plants furnish not only ample material to the curious and patient investigator, but also much food for thought and reflection to all who are impressed with the manifold resources of the divine mind. During the past nine years these phenomena have been to me especial objects of interest. Nevertheless, I have not yet been able to dissipate all the mystery which enshrouds them. Many of these manifest in their development and growth vegetable and then animal characteristics, phenomena which belong clearly to vegetable existence, and then again others which are no counterparts of what we know of either animal or vegetable life. The vegetable seems to be their highest form of life, but when the allotted resources of this are exhausted or terminated these two plants, between which the finest microscopes fail to discern any characteristic differences, will, under some occult influence it is impossible to unveil, approach each other and simultaneously open their cell walls to pour out into a commingling stream their chlorophyllous granular cytoplasm, which becomes a spherical mass, inclosed in a cell-wall with an armor of more or less elongated spines. The further development of these spherical bodies, or zygospores, is rarely seen, and notwithstanding my many opportunities of witnessing the phenomenon I can not assert positively that I have as yet had that pleasure, although it must take place in order to produce the perfect plant.

At the last meeting of the Society in Elmira a number of the members expressed the wish that I should publish the results of my observations on the desmids, with illustrations similar to the pen sketches shown by me at that meeting. I now take pleasure in announcing that I have in a forward state of preparation a work on the desmids of the United States, to be illustrated with fifty or more plates of colored sketches, comprising more than one thousand

figures, all drawn by myself, and with rare exceptions from actual observation. They are magnified to a uniform scale of five hundred diameters. The work will possibly be ready for subscribers within six months. The price not to exceed five dollars.